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Notice of Allowability

Application No.

10/849,576

Examiner

Chih-Cheng Glen Kao

Applicant(s)

KIRALY ET AL.

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the Amendment filed on November 29, 2007.
2. ☒ The allowed claim(s) is/are 1-4,6-15,17-25,27,32 and 33.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 01/31/05
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Donald B. Paschburg on January 14, 2008.

2. The application has been amended as follows:

In claim 13, line 3, in the phrase "device for storing", delete "for".

Reasons for Allowance

3. Claims 1-4, 6-15, 17-25, 27, 32, and 33 are allowed. The following is an examiner's statement of reasons for allowance.

4. Regarding claim 1, the prior art fails to disclose or fairly suggest a method for detecting a protrusion in a medical image, including wherein the gradient is processed by: projecting a first plurality of rays from a location in the distance mapped medical image; calculating a value for each of the first plurality of rays based on features of each of the first plurality of rays and the gradient of the distance mapped medical image; and summing and scaling the value of each of the first plurality of rays, in combination with all of the other limitations in the claim. Claims 2-4 and 6-12 are allowed by virtue of their dependency.

5. Regarding claim 13, the prior art fails to disclose or fairly suggest a system for detecting a protrusion in a medical image, including wherein when processing the gradient, the processor is operative with the program code to: project a first plurality of rays from a location in the distance mapped medical image; calculate a value for each of the first plurality of rays based on features of each of the first plurality of rays and the gradient of the distance mapped medical image; and summing and scaling the value for each of the first plurality of rays, in combination with all of the other limitations in the claim. Claims 14, 15, and 17-22 are allowed by virtue of their dependency.

6. Regarding claim 23, the prior art fails to disclose or fairly suggest a computer program product comprising a computer useable medium having computer program logic recorded thereon for detecting a protrusion in a medical image, the computer program logic including program code for processing the gradient to detect a protrusion in the medical image, wherein the gradient is processed by: projecting a first plurality of rays from a location in the distance mapped medical image; calculating a value for each of the first plurality of rays based on features of each of the first plurality of rays and the gradient of the distance mapped medical image; and summing and scaling the value of each of the first plurality of rays, in combination with all of the other limitations in the claim. Claims 24, 25, and 27 are allowed by virtue of their dependency.

Art Unit: 2882

7. Regarding claim 32, the prior art fails to disclose or fairly suggest a method for detecting a protrusion in a medical image, including wherein the gradient is processed by: projecting a plurality of rays from a location comprising an original distance value in the distance mapped medical image; calculating an absolute value of a difference between a length of each of the plurality of rays and a distance value at an end of each of the plurality of rays, wherein the length of each of the plurality of rays is a fraction of the original distance value from the location; and dividing a sum of the absolute value by the total number of the plurality of rays, in combination with all of the other limitations in the claim.

8. Regarding claim 33, the prior art fails to disclose or fairly suggest a method for detecting a protrusion in a medical image, including wherein the gradient is processed by using first, second or third techniques:

wherein the first technique includes: projecting a plurality of rays from a location comprising an original distance value in the distance mapped medical image; determining a distance value for each of the plurality of rays that is a fraction of the distance value from the location; calculating a sphere-based response of the plurality of rays; and detecting the protrusion using the first sphere-based response;

wherein the second technique includes: projecting a plurality of rays from a location comprising an original distance value in the distance mapped medical image; determining a distance value for each of the plurality of rays that is a fraction of the original distance value from the location; calculating a sphere-based response of the

plurality of rays; calculating a gray-level difference of the distance mapped medical image; and detecting the protrusion using the gray-level difference;

wherein the third technique includes: projecting a plurality of rays from a location comprising an original distance value in the distance mapped medical image; determining a distance value for each of the plurality of rays that has a supplementary ray that has a distance value less than the original distance value; calculating a hemisphere-based response of the plurality of rays; and detecting the protrusion using the hemisphere-based response,

in combination with all of the other limitations in the claim.

9. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

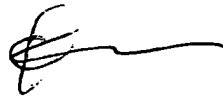
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (571) 272-2492. The examiner can normally be reached on M - F (9 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2882

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Chih-Cheng Glen Kao
Primary Examiner
Art Unit 2882